

REMARKS

The present submission is in response to the Final Office Action mailed on March 11, 2005 and includes a Request for Continued Examination of the application under 37 CFR §1.114 and two-month extension in the due date for a response.

Claims 1-4, 6, 7, 10-31, and 43-57, of which only claims 1, 55, 56 and 57 are independent claims, are currently pending in the application. In the present amendment claim 1 is amended and a new independent claim 58 is added.

In the Office Action, the Examiner rejects the claims "under 35 USC 103 as unpatentable over Zumeris (140) in view of Iino for the specific reasons set forth in the previous Office Action (7-15-04)". The Examiner also objects to the claim language which the Examiner submits does not recite apparatus limitations as proper structural limitations.

Claim 1 is amended to recite limitations in proper structural form and to clarify the characterizing features of the power supply that provide it with independent control of longitudinal and transverse vibrations in the vibrator. New claim 58 is a method claim corresponding to apparatus claim 1. Applicants respectfully traverse the rejection.

The Examiner argues that even were the limitations of unamended claim 1 to be properly drafted as structure limitations, the limitations would not distinguish claim 1 over Zumeris in view of Iino. In support of the argument, the Examiner provides three references to Zumeris:

- 1) "The electrodes of Zumeris are both 'electrifiable' and electrified to produce both longitudinal (x) and transverse (4) (sic) vibrations";
- 2) In fact, each electrode can be separately, independently controlled (col.8 lines 17-21 and 30-37) (col. 7 lines 17-21); and
- 3) "Note, too, col. 5, line 662 (sic)-col 6, line 15 which teaches changing the phase of the X-mode while holding the y-mode the same to reverse direction. To achieve this, the output motion is reversed, thus the relationship of the x and y modes is independently changed."

With regard to item 1), applicants agree that the Zumeris electrodes are electrifiable and electrified to produce both longitudinal and transverse vibrations. However, electrifying electrodes to produce both longitudinal and transverse vibrations is not the same as the limitation recited in amended claim 1 of electrifying a configuration of electrodes that excite and control substantially only longitudinal vibrations and a configuration of electrodes that excite and control only transverse vibrations to selectively control form of vibration of the

motor. Zumeris does not describe a motor having a power supply configured to independently control longitudinal and transverse vibrations in this manner.

Similarly, with regard to item 2) electrodes that can be separately controlled is not the same as electrifying a configuration of electrodes that excite and control substantially only longitudinal vibrations and a configuration of electrodes that excite and control only transverse vibrations to selectively control form of vibration of a piezoelectric motor.

Finally, with regard to item 3), reversing phase of the x-mode while holding the y-mode the same constitutes controlling the x-mode independent of the y-mode but does not constitute controlling both modes independently of each other, i.e. controlling the x-mode independent of the y-mode *and* the y-mode independent of the x mode. Furthermore, claim 1 recites that “the at least one power supply controls electrification to independently control excitation of longitudinal and transverse vibrations *so as to selectively generate different forms of vibratory motion in the vibrator.*” The Examiner has already agreed in the discussion of Iino that reversing phase does not constitute generating different forms of vibratory motion.

In view of the above it must be concluded that none of the above references to Zumeris provides a limitation recited in claim 1 with respect to how the electrodes are excited. Since the Examiner relies only on Zumeris to provide such limitations in order to establish the prima facie obviousness rejection of claim 1, the rejection is not supported.

With regard to independent claims 55, 56 and 57, all present specific structural limitations. None are susceptible to the criticism that they do not recite proper structural limitations.

Furthermore, claim 55 recites the following structural limitations:

“at least one electrical power supply that electrifies pairs of quadrant electrodes disposed along different diagonals with AC voltages that are 180° out of phase with each other to excite transverse vibrations parallel to the at least one or more edges and all quadrant electrodes on the second face surface of at least one but not all the layers with a same AC voltage to excite longitudinal vibrations in the vibrator and controls magnitudes of AC voltages used to excite longitudinal and transverse vibrations to selectively provide different forms and amplitudes of vibratory motion of the contact region in a plane parallel to the planes of the layers.”

These structural limitations are not found anywhere in either Zumeris or Iino. It is noted that AC excitation of quadrant electrodes described by Zumeris invariably involves “an AC voltage near the resonances of the piezoelectric ceramic” (col 7 line 15, 16) where “the resonances” refer to transverse and longitudinal vibrations. Such excitation does not provide independent control of the longitudinal and transverse vibrations and no other structure

described in Zumeris provides for independent control of *both* longitudinal and transverse vibrations. The limitations of claim 55 therefore are not found in Zumeris. In addition, as noted before, and apparently agreed to by the Examiner, Iino does not teach controlling form of motion of a layered piezoelectric motor by controlling its electrification. The limitations of 5 claim 55 are therefore also not found in Iino. Claim 55 is therefore patentable over the combination of Zumeris and Iino.

With regard to independent claims 56 and 57, as noted in the communication of January 10, 2005, claim 56 uses phase to selectively generate different forms of vibratory motion and claim 57 uses frequency to selectively generate different forms of vibratory motion. None of these limitations are found in any form in either Iino or Zumeris and the 10 combination Iino or Zumeris does not and cannot support an obviousness rejection of the claims.

It is further noted that dependent claims 15, 18 and 19 recite a limitation that provides for bending vibrations in addition to longitudinal and transverse vibrations. Neither Zumeris 15 nor Iino mention such vibrations and therefore these claims and claims dependent on these claims are patentable over Zumeris and/or Iino.

In view of the above applicant's feel that all the pending claims in the application are patentable and respectfully request that the Examiner reconsider the finality of the current Office Action and allow the claims.

20 Applicants further point out that a 1449 form was filed on March 5, 2004 together with a copy of the cited art. The form was never received in return initialed by the Examiner. Applicants are resubmitting the form and respectfully request that all the items listed thereon be initialed by the Examiner to ensure that they appear on the face of the patent issuing on the present application. Applicants assume that the art has already been considered by the 25 Examiner in accordance with MPEP 609.

An action on the merits is respectfully awaited.

Respectfully submitted,
Ze'ev GANOR, et al.

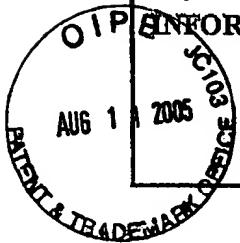
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August 11, 2005


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INFORMATION DISCLOSURE CITATION <i>(Use several sheets if necessary)</i>		ATTY DOCKET NO. 013/02472	SERIAL NO. 09/980,375
		APPLICANT(S) Ze'ev GANOR	
		FILING November 29, 2001	GROUP 2834

U.S. PATENT DOCUMENTS

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION	
						YES	NO
	1.	EP 0 313 072	26 Apr '89	Europe			
	2.	EP 0 755 054	22 Jan '97	Europe			

OTHER DOCUMENTS (Including Author, Title, Date Pertinent Pages, Etc.)

3. MORI, K. et al.; "Ultrasonic Linear Motor for a High Precision X-Y Stage"; 3 October, 1989; IEEE 1989 ULTRASONIC SYMPOSIUM PROCEEDINGS, Canada; pages 657-660.

EXAMINER _____ **DATE CONSIDERED** _____
REVIEWED: Initial if references considered and either or not citation is in conformance with MPEP 600; Draw line through

Equivalent to Form PTO-1449

DATE CONSIDERED

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